Amendments to the Claims

Claims 1-10 (Canceled)

11. (New) A method for thermally-assisted recording on a magnetic recording disk by applying a magnetic write field to a region of the disk while said region is at a temperature above the storage temperature, the method comprising:

providing a magnetic recording disk, the disk comprising

a substrate;

a layer of antiferromagnetic-to-ferromagnetic switching material on the substrate, the switching material being antiferromagnetic at a storage temperature below 340 K and having an antiferromagnetic-to-ferromagnetic transition temperature T_{AF} greater than 340 K and a Curie temperature T_{CL} greater than T_{AF}, the switching material comprising $Fe_x(Rh_{100-y}M_y)_{100-x}$, where $(0 \leq y \leq 15)$ and $(40 \leq x \leq 55)$, and M is an element selected from the group consisting of Ir, Pt, Ru, Re and Os; and

a layer of ferromagnetic recording material in contact with the switching layer and being magnetized in said region and having a Curie temperature T_{CH} greater than T_{AF} and a storage temperature coercivity too high to permit switching of its magnetization by the applied write field at the storage temperature, the switching layer and recording layer being coupled ferromagnetically at a temperature greater than T_{AF} and less than both T_{CL} and T_{CH};

heating the recording layer and the switching layer in said region to a temperature greater than T_{AF} and less than both T_{CL} and T_{CH}; whereby the switching layer becomes ferromagnetic and ferromagnetically coupled with the recording layer, and the

ferromagnetically coupled switching layer and recording layer achieve a coercivity substantially less than the storage temperature coercivity of the recording layer; and

applying the write field to the heated region of the ferromagnetically coupled switching layer and recording layer to switch the magnetization of the recording layer in said region; whereby after the temperature in said region returns to the storage temperature the switching layer is antiferromagnetic and the recording layer in said region retains its switched magnetization.

12. (New) The method of claim 11 wherein providing the disk comprises providing a disk having the recording layer on top of the switching layer with the switching layer located between the substrate and the recording layer.

13. (New) The method of claim 11 wherein providing the disk comprises providing a disk having a recording layer with substantially perpendicular magnetic anisotropy.

14. (New) The method of claim 11 wherein providing the disk comprises providing a disk having a recording layer with substantially horizontal magnetic anisotropy.